

Stem Cell for the Present: Reconfiguration of Stem Cell Research, Ethics and Bio-industry in South Korea after the Hwang[†]

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Since the Hwang scandal, the South Korean state has expressed often-conflicting interests of encouraging stem cell research and the IVF industry to save the country and introducing the ethical regulation in conformity with "Global Standard." As the tightening ethical regulation of stem cell research has enervated the field of human Embryonic stem cell(hESC) research, somatic stem cells (re-)emerged as an alternative savior that could rescue the future of research communities, bio-industry, practicing doctors, patients and the nation itself from the crisis. The recent literature on Korean biotechnology, however, mainly focus on hESC and relatively little attention has been given to the rapidly growing field of research on somatic stem cells like hematopoietic stem cells(HSCs) or Adipose derived stem cells(ASCs). While the hESC therapy is often regarded as experimental and ethically controversial, the HSCs or Mesenchymal stem cell(MSC) therapies have already made their ways into people's everyday life through market without much public discussion. Many ordinary people in South Korea are familiar with the story of patients who survived leukemia with the HSCs treatment; the number of doctors who are actively marketing the ASCs therapies is on the rapid increase; the concept of cosmetic products made from ASCs is gaining popularity among consumers. In this context, this article argues that the current ethical debates solely focusing on hESC or on the state policy and research regulation are too limiting to fully illuminate the politics of stem cell technologies in South Korea.

【Key terms】 human Embryonic stem cell(hESC) research, Adipose derived stem cells(ASCs), ethical regulation, biotechnology, market

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*"Stem Cell is not the future but the present."*¹⁾

1. Introduction

In September 2004, about a year before the Hwang Woo Suk scandal, the DTI Global Watch Stem Cell Mission had visited China, Singapore and South Korea and published a report, evaluating the state of stem cell researches in these three countries. Comparing the different orientation of stem cell research in these countries, the mission made an observation that while an imperative among Chinese scientists was to make an impact on clinical application, focus in Singapore was more commercially driven. In contrast, the mission reported that the main activities in South Korea centered on somatic cell nuclear transfer(SCNT) for therapeutic cloning and the derivation of human embryonic stem cells(hESC); neither commercialization nor clinical application, but research laboratory was the dominant force(DTI, 2004).

As of April 2012, however, the situation of the South Korean stem cell field seems somewhat different from the one at the point of the DTI visit. As the field of human embryonic stem cell(hESC) research became subject to ethical scrutiny, somatic stem cells (re-)emerged as an alternative savior that could rescue the future of research communities, bio-industry, practicing doctors, patients and the nation itself from the crisis. While the National Bioethics Committee in Korea has been stumbling over the issue of ova donation for research or granting permission for hESC research, the

1) From the website of BioStar Co., a stem cell bank in South Korea.
www.biostar.co.kr

rapidly growing field of research on somatic stem cells and somatic stem cell therapies have already made their ways into people's everyday life without much public discussion.

Many ordinary people in South Korea are now familiar with the story of patients who survived leukemia with the hematopoietic stem cells(HSCs) treatment. Parents who are banking umbilical cords of their newborns at private and public cord banks do not just passively await the further development of somatic stem cell research but they intend to facilitate this development by encouraging other parents to bank or donate cords. In addition to umbilical cord banking, some companies now offer the services of placenta and fat tissues containing mesenchymal stem cells(MSCs). On the other hand, the number of local clinicians who are actively marketing the adult stem cell therapies is on the rapid increase the stem cell therapies are not just experimental ones being offered at tertiary hospitals in the form of clinical trials any more. At the same time, the idea of cosmetic products made from MSCs is gaining popularity among consumers the national cosmetic brand *Amore* recently released a new line of stem cell products after the international brand *Dior*. The age-old cosmetic products using human and animal placenta also began to be re-conceptualized as adult stem cell products.

Despite the rapid change in the field, the recent social science literature on Korean stem cell research still focus mainly on the Hwang scandal and hESC only(Hong, 2008; Kim, L., 2008; Kim, S. J., 2011; Park & Leem, 2008) and relatively little attention has been given to the rapidly growing field of research on somatic stem cells like hematopoietic stem cells(HSCs) or adipose derived stem

cells(ASCs). Even less attention has been given to various stem cell therapies or commercial products that people encounter in everyday lives.

By examining the less-explored field of ASCs in clinical practices and bio-industry, I argue that: (1) The introduction of new ethical regulations, not just regulatory gaps, has been one of major formative forces in medical practices in South Korea, (2) If the promoters of ASCs has presented ASC therapy as an answer to the "crises" that both the national economy and the medical community are currently experiencing, the proliferation of ASC reflects an on-going neo-liberal crisis in South Korean citizens' lives, rather than a solution to it, (3) The socio-cultural authority of a cutting-edge stem cell research and the everyday encounter of various stem cell products and therapies, if scientifically less solid, have been complementing each other to reinforce the legitimacy and influence of stem cell research, (4) The current ethical debates solely focusing on procedural aspects or hESC are too limiting to fully illuminate the politics of stem cell technologies in South Korea.

2. The Rise of Adipose Derived Stem Cells

Since the Hwang scandal in 2005, the South Korean state has expressed seemingly conflicting but often compatible task of encouraging stem cell research and the IVF industry to save the nation, and introducing the ethical regulation in conformity with "Global Standard" at the same time. The Hwang scandal exposed

the fact that the infertility clinics have functioned as loci of commodified ova supply both for research and for infertility treatment in South Korea. Yet, any attempt to regulate assisted reproductive technology has been met by criticism that the new regulation might breach the human rights of infertile couple desiring to have their own child, especially at a time that the country is suffering from low fertility problem (Paik, 2007). The state's unwillingness to regulate assisted reproductive technologies, in turn, intensified suspicion among the critics of hESC. They criticized that the resumed hESC research would revive the commercialized ova trafficking network involving infertility clinics by increasing the demand for ova. Being an ethically contentious issue, the question of ova donation for research has led the hESC field to an impasse.

1) Adult Stem Cells: Stem Cells for the Present?

On the other hand, the field of somatic stem cell began to flourish as an "ethics-free" alternative way to conduct stem cell research. During, and even after, the Hwang scandal, ethical controversy in South Korea has centered on the personal misconduct of Hwang Woo Suk himself or on the issues like ova donation, embryo destruction or cloning, all specific to hESC. In fact, even the Center for Democracy in Science and Technology (CDST), who played a major role in bringing up the ethical issues in Hwang Woo Suk's research, suggested that adult stem cell research was not only ethically but also as equally effective as hESC.²⁾ The Catholic

2) See <http://blog.peoplepower21.org/PSPD/4876> and other articles. It is unclear whether it was a strategic decision for CDST to resist the current direction of

Church and ethicists with Catholic faiths also contributed to the establishment of umbilical cord banks³⁾ and provided research funding for adult stem cell researches. In an interview with a Christian newspaper in December 2005, criticizing the ethically controversial nature of hESC, Kang Kyung Seon, a veterinary scientist and adult stem cell scientist at Seoul National University, who is also a Methodist, argued:

I am strongly against the opinion that the early embryos before 14 days are just bundle of cells. Christ born from Virgin Mary was also an embryo at one point. ...Since every life starts as an embryo, it is not right to say that one can destroy life to save another life. ... On the other hand, the use of adultstem cells is a recycling of God's gift. Adult stem cells are easy to collect, and they are not ethically problematic. As a God's gift, they do not evolve to cause cancer.⁴⁾

Actually, the fact that adult stem cell field was framed as ethically free means that adult stem cell research could continue without disruption after the Hwang scandal. Being disappointed by uncertainty of hESC stem cell technologies, especially SCNT technology, many patients and consumers, as well as the bio-industry itself, hoped for stem cells that could be put into practical use in the immediate future. Once treated as "other stem

stem cell research in South Korea, yet not to oppose stem cell research in general. At any rate, what I would like to argue here is that this discursive work contributed to frame adult stem cell as ethically free in the aftermath of the Hwang Woo Suk scandal.

3) See www.chscb.org for The Network of Catholic Cord Banks.

4) <http://www.kmctimes.com/news/articleView.html?idxno=18831>

cells," if of less promissory importance compared to hESC (Brown et al, 2006), adult stem cells seemed less likely to go bankrupt. In other words, replacing ethically controversial hESC research and risky and experimental hESC therapies, the field of adult stem cell could emerge as an alternative way to save the research community and to realize the future dream of Korea as a leader of biotechnology that hESC had promised in the present.

2) Why Adipose Stem Cell?

Adipose-derived stem cell is known to be a category that was invented by Dr. Adam Katz and Dr. Ramon Lull at Pittsburgh University.⁵⁾ ASCs are claimed to be a particularly valuable and useful category of adult stem cells, since they can be easily sourced from a small amount of a patient's adipose tissue. This sourcing is simple, and can be done from the fat tissue removed in a liposuction procedure, or done by simply taking a small sample of a patient's fat tissues. Since early 2000s, a rapidly growing body of scientific literature has reported that ASCs are quite versatile and able to differentiate into osteogenic, adipogenic, myogenic, and chondrogenic lineages in much the same manner as MSCs. The greatest advantage of ASCs over other types of adult stem cells is known to be its large number at the point of harvest. Moreover,

5) In 2008, after a long legal battle with UC based scientists, the court recognized Dr. Adam Katz and Dr. Ramon Lull as the sole inventors of adipose-derived stem cells. As a result, only Pittsburgh and its exclusive worldwide licensee Artec, have rights in the composition-of-matter patent covering stem cells isolated from adipose tissue. *Medical News Today*, June 21, 2008.

<http://www.medicalnewstoday.com/articles/112201.php>

ASCs are known to expand well in culture and are relatively easy to manufacture and store. Based on these merits, they are expected to play a major role in the future development of regenerative medicine (Gimble et. al., 2007; Jeong, 2008; Seo, 2011; Kim, S. H., 2011).

In addition to the merits that ASCs generally claim to have, there are additional points that make ASCs particularly attractive in South Korean context. Firstly, many of the adult stem cell researches and therapies require reproductive materials like umbilical cords, menstruation blood and placenta. Therefore, the advancement of the field has caused concerns about "tissue economies"(Mitchell & Waldby, 2006) of these materials among South Korea feminist activists who still have vivid memory of the recent ova trafficking incidents. On the other hand, ASCs treatments are mostly autologous, so they can be seen as a patients' own choice, not an exploitative transaction. Second, since ASCs can be easily obtained from body fat and they are relatively abundant in fat tissues, even local clinicians can process ACS for its clinical application. Recent development of technologies has allowed processing ASCs without clean room system or with simple equipment. Since this means literally any local doctor can participate in ASC practices without further qualification, this feature has opened up greater possibilities of commercialization, causing rapid proliferation of ASC therapies in South Korea.

In the following sections, I will case-study RNL Bio-Venture Company and a practice of soft tissue augmentation using ASC injection in local clinics in order to understand the current state of the ASC enterprise in South Korea.

3. ASC in Bio-Industry: a Case of RNL Bio Company

1) Creating a Global Network

In January 2009, RNL Bio Co., a biopharmaceutical company specialized in adult stem cell based therapeutics announced that two puppies were cloned using adipose derived stem cells, not somatic cells, from a Beagle donor for the first time in the world. The company named these puppies as Magic and Stem.⁶⁾ In collaboration with the Seoul National University scientists, RNL developed this technology to develop technologies for induced pluripotent stem cells(IPS), adult stem cells that are made to act like embryonic ones, and eventually to advance patients-specific stem cell treatment for conditions such as Parkinson's disease, diabetes and degenerative arthritis. Actually, this development came out after the legal dispute about patent on dog cloning technology with Start Licensing, a Texas-based company that holds the license for the technology developed from the cloning of Dolly the sheep. While RNL and the California-based Bio Arts, backed by Start, are the world's only two companies involved in commercial dog cloning, RNL tries to distinguish itself by cloning dogs based on ASC technology. For RNL, ASC technology is not just the one that is less controversial, easy and more effective, but, it seems, only with this technology, they will be able to regain their ground in cloning industry. It is interesting to note that while RNL has been collaborating with Kang Kyung Seon at Seoul National University,

6) January 29, 2009. "Dogs Cloned from Fat Stem Cells," *The Korea Times*.
http://www.koreatimes.co.kr/www/news/tech/2009/01/133_38646.html

whose specialty is in adult stem cell technologies, Bio Arts's Korean partner is the SooAm Foundation, where Hwang Woo Suk, Kang's former colleague and rival at SNU and an expert on animal cloning using SCNT, is currently based.⁷⁾

This event explains the importance of ASC technology for stem cell scientists in the current situation. Without using ova or destroying embryo, ASC researchers are trying to achieve what SCNT scientists have been trying: to develop patients-specific stem cell treatment for degenerative conditions. Since 2007, actually, RNL acquired patent on the ASC based medicines for a few degenerative conditions including Buerger's Disease, Romberg's disease and degenerative arthritis. Then, the Korean FDA banned the clinical application of the kind of stem cell therapies that involve "biological, chemical, or physical" manipulation of stem cells outside human body. In July 2008, RNL opened two stem cell therapy clinics in China, in order to evade ethical regulations and controversy in South Korea. In fact, it is not clear that the Korean FDA was aware of the ethical implication of the ASC based medicines. Yet, one can say that the Korean FDA perceived unsafe treatment as ethically problematic. In March 2009, RNL set up a legal corporation in the USA, to recruit patients from the US as well as South Korea, and started bringing them to their clinics in China in the form of medical tourism. RNL agreed with a Japanese company to transfer its stem cell technologies for loyalty in June 2008 and with a Mexican company in October 2008. It also

7) January 29, 2009. *Hankyung Newspaper*.

<http://www.hankyung.com/news/app/newsview.php?aid=200901291902g&sid=0105&nid=910>

contracted with a lab at New Castle University in UK in January 2008. As of 2012, RNL advertises its network throughout Berlin, Germany, China, Japan, the US, Mexico, and Korea.⁸⁾

Another area of global business that RNL has been striving to boost is cosmetics industry. Soon after RNL developed a beauty product using placenta stem cells, named "Dr. Jucre" in April 2008, the Korean FDA banned any cosmetic product based on human or bovine placenta for safety reasons. Again, to evade the Korean bioethical regulations, RNL exported the products to Japan right after, and announced its plan to launch shops in Paris, New York, and Hong Kong by the end of 2009. As of 2012, there are several brands and "stem cell" cosmetic products easily available in major department stores and on-line shopping malls.

2) Bringing Stem Cells into Everyday Life

Although RNL aims to gain distinction in the area of patient-specific stem cell treatment, it has a whole other range of means to bring stem cells into ordinary people's (not just patients') lives. In October 2006, it opened a "comprehensive stem cell bank for the whole family," named BioStar Co. RNL's BioStar offers commercial storage service for umbilical cord, placenta stem cells to ASCs. More recently, BioStar developed a more specified service of storing hepatitis carriers' ASCs for the time when their livers degenerate into hepatocirrhosis, promising that liver regeneration will be shortly available through RNL technology. In December 2008,

8) http://rnl.co.kr/kor/company/company_g_network.html

BioStar finally started stem cell banking services for pets, especially dogs, in Seoul and in Los Angeles. Emphasizing that the process of extracting fat tissues requires only local anesthesia, easy and simple, every human and animal are encouraged storing their ASCs for the future. At the same time, RNL opened three beauty clinics where it can perform ASC injection to reduce wrinkles and to treat hair loss. While the ASC medicines or beauty products based on ASC are banned in South Korea due to safety concerns, autologous injection of ASC is legal. RNL participates in this market of autologous ASC injection to increase the market and maximize its profit at the same time.

RNL has brought stem cells into health food industry as well. It released a drink product named "Stem Cell Booster," which is supposed to "wake up inactive stem cells." Actually, RNL has been producing a full line of organic food products and nutrition supplements even before it entered into stem cell industry. Its reputation as a Bio-Venture company allowed RNL to present its old health food products as new "stem cell"foods in a changed environment. These stem cell foods and other products might seem scientifically dubious. Yet, the scientific legitimization of cutting-edge stem cell research and the everyday encounter of various stem cell products and therapies have been re-enforcing each other. While the new science or technology often has a power of adding fresh value to old products, the stem cell products and therapies in everyday life make people to accept the fact that stem cell technologies are non-reversible and non-questionable trend in the society and already a part of our everyday life.

3) ASC as a Safe and Ethical Technology?

While RNL has emphasized ASC technology is safe and not problematic in ethical terms this technology has many commonalities with more controversial technology of hESC. First, examining ASC and hESC in South Korean context, they seem to be operating within the same socio-technical imaginary of the "technology for developing the nation and proving the Korean excellence"(Kim, S. H., 2009). RNL constantly invoke that its achievement is "for the first time in the world, beating the American firm with Korean technology," as in the case of cloned dogs from ASCs. It tries to legitimize yet-to-be-approved technologies of ASC therapy, by arguing that the ASC therapy can be a way to recruit patients from abroad, which will allow South Korea to be a hub of medical tourism, and save the nation from frustration after the Hwang scandal.

Second, in both cases of ASC and hESC technologies, globalization has been a way to evade safety and ethical regulations. It was not just the industry that has been forging and participating in these global bio-networks(Mitchell & Waldby, 2007). The media has featured sensational articles and aired TV programs on the booming stem cell therapies for the international visitors in China, or in India. Patients know that the therapy illegal in South Korea is more than likely to be available somewhere else in the globe. Exploiting this international discrepancy of regulations and seeking the last resort cure for their illness, some South Koreans visit the stem cell clinics in China to receive ASC therapy, paying almost \$10,000 USD per one treatment.

4. ASCs in Clinical Practices: Soft Tissue Augmentation

Currently, it is not difficult to spot a local clinic with a sign of "Stem Cell Treatment" in "Plastic Surgery District" in Seoul. While reading newspaper articles on-line or composing Google mail on the Internet, one cannot avoid advertisement banners for the clinics offering "Stem Cell Treatment." Even a plastic surgeon, Dr Yoon, who is critical of the stem cell treatment currently being practiced at local clinics, comments:

It has become a trend and a fashion. There is no way you don't do it. Patients ask for it and the clinics next to you carry a big sign saying "Most advanced cutting-edge technology of stem cell treatment available. Better result by 80%." What can you do? And you can easily charge more than the double. This is not an industry based on a scientific proof. We feed people's hope, dream and desire. *If it is not now, it will never be.*⁹⁾

If stem cell treatments are not allowed except for the clinical trials at tertiary hospitals, how do they become possible in reality? In fact, the prevalent ASC treatments available on the street and the are not the same kind of stem cell treatments.

1) Neo-liberalization and ASC treatments at Local Clinics

Autologous ASC therapies were widely practiced by many clinicians at local clinics by early 2008 and still are. Whereas most of the medical treatments promising to cure serious diseases were not

9) Interviewed on March 18, 2009. Emphasis is mine.

available in South Korea due to the FDA regulation, the actual "ASC treatments" prevalent in the countries were soft tissue augmentation using autologous ASCs. Local clinics could easily harvest patients' adipose tissues. When they sent these tissues to a Bio-Venture company for processing, cell therapy medicine was delivered back to them in an ample container. All they had to do was to inject that medicine to the patient. In April 2008, however, the Korean FDA introduced tighter regulations on cell therapy to be effective in the following October. Thus, clinics should acquire permission of the Korean FDA, if their cell therapies involve "process of stem cell cultivation outside human body, or [if their therapies are] not just biological, but also chemical or physical manipulation of cells." This resulted in the significant changes in stem cell therapies at local clinics. While most of the local clinics that had been practicing stem cell therapies were not eligible to get permission, they had no intention to get permission from the Korean FDA anyway. Once their practices begin to be regulated, it would mean the intervention of the National Health Insurance Corporation or the Ministry of Health and Welfare, which, in turn, would mean loss of extra profit.

In fact, the drive behind the stem cell therapy boom at local clinics was to find services that were not covered or regulated by the National Health Insurance. Especially since the IMF economic crisis in the late 1990s, local clinics providing primary health care have been the victim of neo-liberalization in health care system (Paik, 2008). In the midst of the state policy promoting privatization and commercialization of health care in general, local clinics have been dealing with their crises by offering non-regulated medical services.

For them, ASC therapy used to be a "lantern for local clinics in despair." In this context, these clinics decided to simply skip the process of cultivation. They continued stem cell treatments "without cell cultivation," meaning mostly soft tissue augmentation. With the disintegration of health care system, local clinicians, who have been failing to keep their business by providing primary care services, argue their participation in rather dubious ASC therapy are legitimate(Pressian, 2010).

For the citizens' part, as economic and social insecurity increases, the pressure to conform to the societal bodily norms and to manage their bodies' shape and function optimally has led many of them to go through expensive plastic surgery including soft tissue augmentation via ASC injection(Featherstone, 1992; Martin, 1991).

2) Why Soft Tissue Augmentation?

Soft tissue augmentation has been a promising and lucrative field, a well-known field that is not covered by the National Health Insurance in most of the cases. While soft tissue augmentation can be regarded as a subfield of plastic surgery, which has been one of the least regulated medical specialties in South Korea, it does not really require a skill of plastic surgeon to inject ASCs. As the practitioner simply draws out the patient's fat tissues, extracts ASCs and reinserts them, the Korean FDA has not prioritized regulating soft tissue augmentation using ASCs. In fact, beyond the safety of injected ASC extracts, it was not even clear whether the Korean FDA had authority to regulate soft tissue augmentation. Moreover, since plastic surgery is designated to be one of the three promising

commodifiable items for Korean medical tourism¹⁰⁾, the Korean government is ready to support the plastic surgery industry by loosening the regulation. Also, the stable social demand for plastic surgery has been already confirmed both nationally and internationally(Leem & Park, 2008). Plastic surgeons also have noticed ASC therapies have great potential for promoting medical tourism through non-surgical cosmetic procedures(Shin, 2011).

Soft tissue augmentation using ASCs has been applied to a wide range of areas: breast augmentation, penis augmentation, facial wrinkle reduction, rhinoplasty, and "stem cell vaginal rejuvenation." Specialties of doctors working on soft tissue augmentation with ASCs range from dermatology, general surgery, pathology, family medicine, OB/GYN, ENT, and urology, not to mention plastic surgery.¹¹⁾ As soft tissue augmentation with ASCs is so lucrative, the number of local clinics conducting this procedure is on the rapid increase. Moreover, since the equipment of a self-contained ASC processing system has been developed and distributed among local clinicians, even small private clinics without an access to a GMP(Good Manufacturing Practice)¹²⁾ clean-room can now instantly process and purify ASCs for injection. As the technique as such is not very complicated and no regulation exists for ASC injection,

10) The Ministry of Health and Welfare has announced that plastic surgery, health screening and IVF industry to be the three promising fields that would make South Korea a hub of medical tourism.

11) See <http://www.kaar.or.kr/> for Korean Academy of ASC Research. <http://www.eantiaging.or.kr/> for Korean Society of Stem Cell Treatment. <http://www.kaw.or.kr/> for Korean Association of Aesthetic and the Well-being. www.ksaps.or.kr/ for Korean Society for Aesthetic Plastic Surgery.

12) A good manufacturing practice(GMP) is a production and testing practice that helps to ensure a quality product.

any licensed medical doctor can participate in the procedure.

3) ASC: a Savior Technology?

As in the case of Hwang, the promoters of ASCs have argued that ASC therapy and the medical tourism that ASC would promote would save the nation from economic crisis, the practitioners from health care crisis and the researchers from ethical predicament. At the same time, ASC injection has been believed to rejuvenate individual bodies, medical communities and national economy. Dr. Park, who is a family doctor, says:

You have nothing to lose with ASC treatment. It is good for the state as it can tax more. Chinese and Japanese are coming to spend money here. It is not just good for the national economy. Those foreigners who came to Korea, they love Korean culture and Koreans. We are patriots! And you don't need to worry about damn ethics as in some other treatments. ASCs, they are just your own cells. Pure [cells]. But, frankly, most of all, we local clinicians are rats on a wrecked ship. If we don't even have this kind of things, we can't survive. I guess, in that sense, it doesn't need to be ASCs. Yet, doesn't it sound great? Stem Cell! It sounds like it will work!¹³⁾

Presented as a solution to multiple crises, the proliferation of ASC injection at the local clinics in Korea, reflects the on-going neo-liberalization of South Korean citizen's lives: the disintegration of health care system driving local practitioners away from primary

13) Interviewed on February 3, 2009.

health care; the collapse of social solidarity forcing people to seek individualized medicine and the increased sense of insecurity among ordinary people drawing them into an endless struggle of self care and management. At the same time soft tissue augmentation with ASC injection has accelerated the commercialization of health care system and the exodus of local clinicians from non-lucrative but essential medical services. While OB/GYNs are performing vaginal rejuvenation, 57 out of 248 administrative units in South Korea now lack delivery facilities. In this sense, if ASC is a response to a neoliberal crisis, it is an accelerator of this crisis at the same time.

5. Conclusion

While ASC therapies and products have been proliferating in South Korea, they have not drawn much attention from the public or those engaged in the current bioethical debates. Yet, it is not simply because ASC treatments or products are safe and ethical as the promoters argue. The Korean FDA's negligence is partly because it assumes that a simple ASC injection would not be very efficacious. In a way, this is ironical that supposedly non-effective medical treatments can be freely practiced and doctors can charge whatever price the market allows. There has been a concern about breast augmentation with ASCs, since especially breast tissues are prone to develop tumors, if benign (Lee, 2009). Moreover, although the disintegration of primary health care has been behind the proliferation of these yet-to-be tested practices all along, the political economy of health care is seldom examined in bioethical debates.

In this context, this study argues that the current ethical debates solely focusing on procedural aspects or hESC are too limiting to fully illuminate the politics of stem cell technologies in South Korea. I conclude that the South Korean situation regarding ASC technologies suggests that it is the introduction of new ethical regulations, not just regulatory gaps, which have formed and reformed medical practices. In other words, since the participants are actively seeking non-regulated fields, the formative forces of a new regulation, in addition to regulatory gaps, would deserve more adequate attention.

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현재를 위한 줄기세포: 황우석 사태 이후 한국에서 줄기세포 연구와 윤리, 바이오산업의 재구성

백영경

황우석 사태 이후 한국의 국가는 줄기세포 연구를 장려하고 시험관 아기 산업을 장려하겠다는 입장과 "글로벌 스탠다드"에 부합하는 윤리적 규제를 도입하겠다는, 많은 경우 서로 모순될 수밖에 없는 입장을 표명하여 왔다. 줄기세포 연구에 대한 윤리적 규제가 점점 강화되면서 인간배아세포 연구가 위축되면서, 연구 공동체와 바이오산업, 임상의사와 환자, 그리고 국가 자체를 위기로부터 구원해줄 대안으로 떠오른 것은 체세포 줄기세포였다. 그러나 한국 생명공학기술에 대한 연구들은 주로 배아줄기세포에 초점을 맞추고 있으며, 조혈줄기세포나 지방유래줄기세포와 같은 체세포 줄기세포에 대한 연구에는 상대적으로 관심이 적은 것으로 보인다. 배아줄기세포가 흔히 실험적이고 윤리적으로 논란거리로 여겨지는 반면에, 조혈모 혹은 간엽줄기세포와 체세포 줄기세포는 별다른 공적인 논의 없이 대중들의 일상 속으로 들어와 있다. 한국의 많은 일반인들은 조혈모 줄기세포 치료를 통해 백혈병으로부터 생명을 구한 환자들의 사례에 이미 익숙한가 하면, 다른 한편에서 지방유래줄기세포 치료를 선전하는 의사들의 수가 늘고 있고, 지방유래줄기세포의 개념을 활용하여 만든 화장품이 소비자들의 주목을 받고 있기도 한 현실이 이미 진행되고 있다. 이러한 맥락에서, 본 논문은 배아줄기세포나 국가 정책이나 연구 규제에만 집중되어 시장을 놓치고 있는 윤리적 논의는 한국에서 줄기세포 기술의 정치의 전모를 다루기에 한계가 크다는 사실을 주장하고자 한다.

【핵심어】 인간배아 줄기세포 연구, 지방유래 줄기세포, 윤리적 규제, 생명공학기술, 시장.